

## Suspension

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# Suspension

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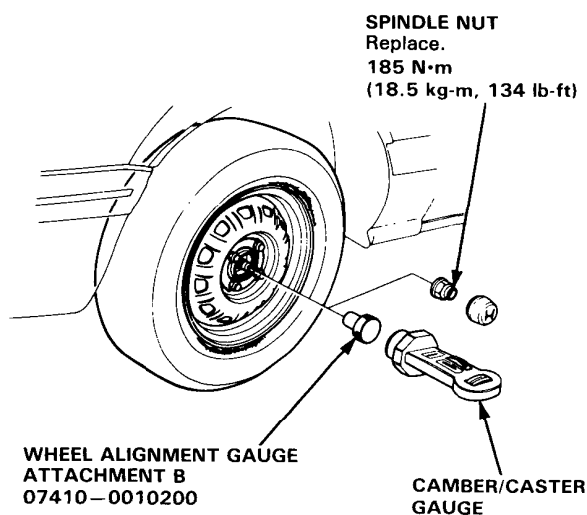
# Wheel Alignment

## Camber Inspection

NOTE: Check tire pressure before inspection.

1. With the wheels in a straight ahead position, remove the spindle nut and install the special tool on the spindle as shown.
2. Set up the camber/caster gauge.
3. Read the camber on the gauge with the bubble at the center of the gauge.

**Camber angle:** Front:  $0^{\circ}00' \pm 1^{\circ}$   
Rear:  $0^{\circ}00' \pm 1^{\circ}$

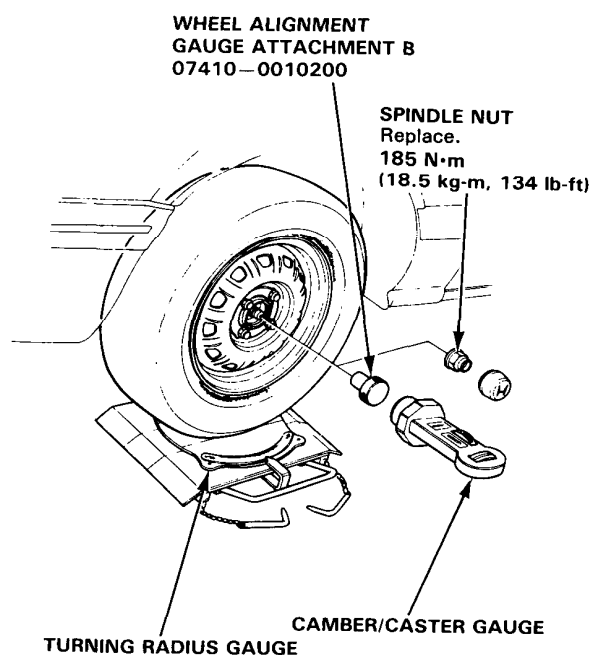


## Caster Inspection/Adjustment

NOTE: Check tire pressure before inspection.

1. Jack up the front of the car and set the turning radius gauges beneath the front wheels, then lower the car.
2. Remove the spindle nut and install special tool Wheel Alignment Gauge Attachment B.
3. Install Camber/Caster Gauge on the Attachment and apply the front brake. Turn the wheel  $20^{\circ}$  inward.
4. Turn the adjust screw so that the bubble in the caster gauge is at  $0^{\circ}$ .
5. Turn the wheel  $20^{\circ}$  outward and read the caster on the gauge with the bubble at the center of the gauge.

**Caster Angle:**  $0^{\circ}30' \pm 1^{\circ}$



6. If adjustment is required, record the caster reading, then go to step 7. If adjustment is not required, remove alignment equipment.

(cont'd)

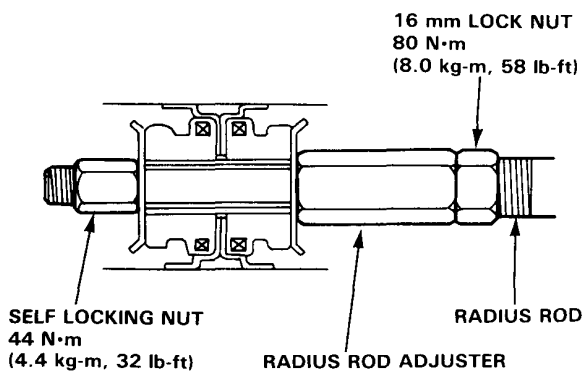
## Wheel Alignment

### Caster Inspection/Adjustment (cont'd)

7. Loosen the radius rod adjuster lock nut, and the self locking nut on the end of the radius rod.
8. Adjust the caster by turning the radius rod adjuster as required.

To increase .....Turn the adjuster in.  
To decrease .....Turn the adjuster out.

NOTE: Turning the adjuster one full turn moves the radius rod 1.25 mm, and changes the caster 0°8'.



9. Tighten the radius rod adjuster lock nut, then tighten the self locking nut.
10. Recheck the caster adjustment.

### Front Wheel Toe Inspection/ Adjustment

NOTE: Check the tire pressure before inspection.

1. Center steering wheel spokes.

NOTE: Measure difference in toe measurements with the wheels pointed straight ahead.

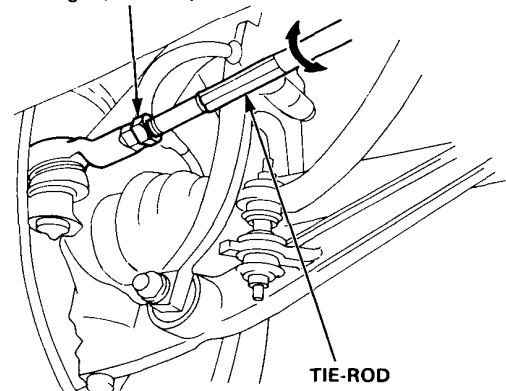
Front toe-in:  $0 \pm 3$  mm ( $0 \pm 0.118$  in)

- If adjustment is required, go on to step 2.
- If no adjustment is required, remove alignment equipment.

2. Loosen the tie-rod locknuts and turn both tie-rods in the same direction until the front wheels are in straight ahead position.
3. Turn both tie-rods equally until the toe reading on the turning radius gauge is correct.
4. After adjusting, tighten the tie-rod locknuts.

NOTE: Reposition the tie-rod boot if twisted or displaced after adjustment has been made.

TIE-ROD LOCK NUT  
45 N·m (4.5 kg-m, 33 lb-ft)





## Rear Wheel Toe Adjustment

1. Release parking brake.

NOTE: If the parking brake is engaged, you may get an incorrect reading.

**Rear toe in:  $0 \pm 2$  mm ( $0 \pm 0.08$  in)**

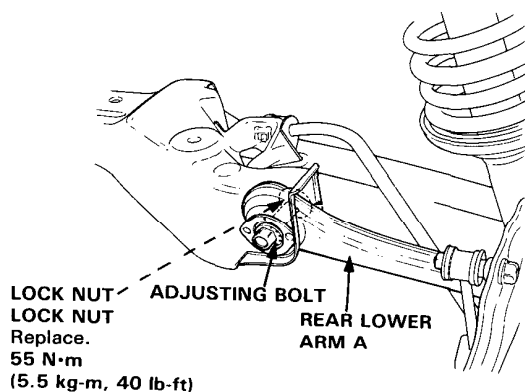
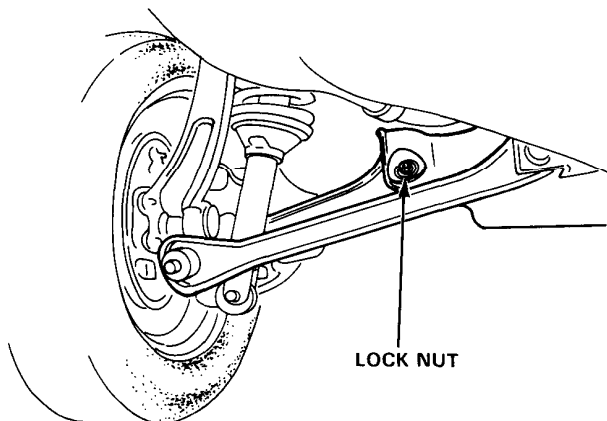
- If adjustment is required, go to step 2.
- If no adjustment is required, remove alignment equipment.

2. Hold the adjusting bolt on the rear lower arm A and loosen the lock nut.

3. Adjust the rear toe by turning the adjusting bolt until toe is correct.

NOTE: Turning the adjusting bolt one graduation changes toe 4 mm (0.16 in) in each wheel.

4. Install a new lock nut and tighten while holding the adjusting bolt.



## Turning Angle Inspection/Adjustment

1. Jack up the front of the car, set the turning radius gauge beneath the front wheels, then lower the car.
2. Turn the wheel right and left while applying the brake, and measure the turning angle of both wheels.

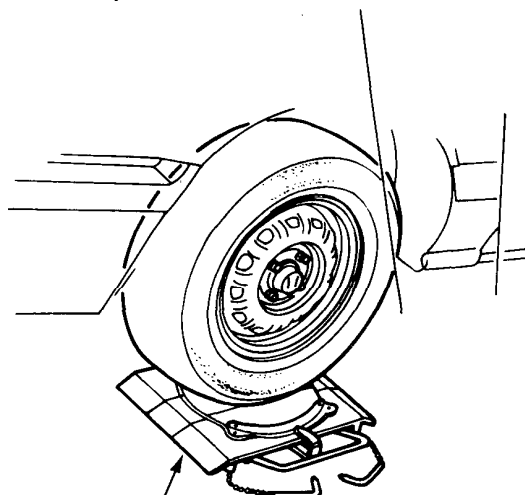
**Turning angle:**

**Inward wheel:  $39^\circ 30' \pm 2$**

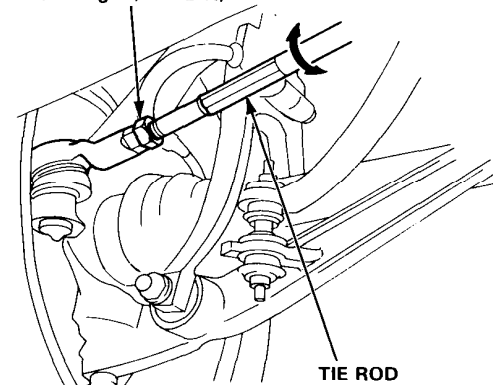
**Outward wheel:  $30^\circ 30' \pm 2$**

3. If the measurements are not within the specifications, adjust as required by turning the tie rod.

NOTE: After adjustments, recheck the front wheel toe and readjust if necessary. Reposition the tie rod boot if twisted or displaced after adjustment has been made.



LOCK NUT  
45 N·m  
(4.5 kg-m, 33 lb-ft)

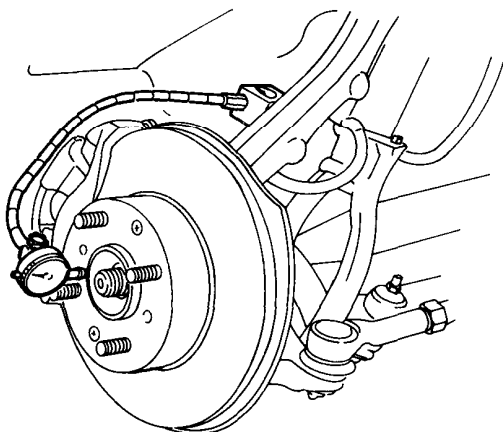


## Wheel Measurement

### Bearing End Play

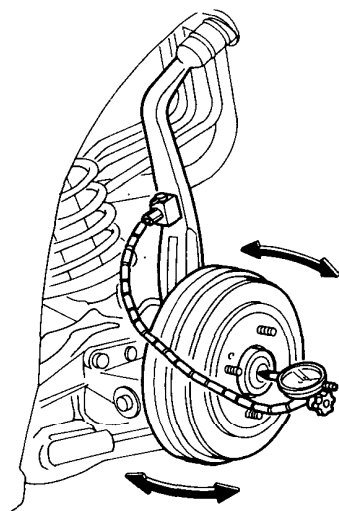
#### Front Wheel End Play

Standard: 0–0.05 mm (0–0.002 in)



#### Rear Wheel End Play

Standard 0–0.05 mm (0–0.002 in)



### Runout

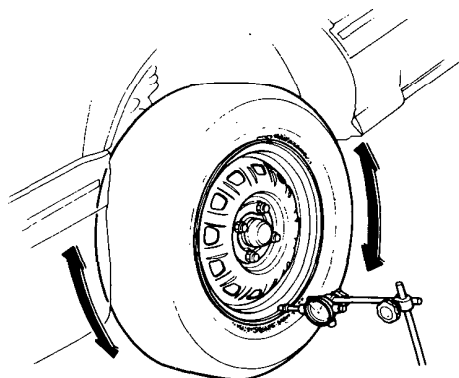
#### Front and Rear Wheel

##### Axial Runout

Standard:

Steel Wheel: 0–0.1 mm (0–0.04 in)

Aluminum Wheel: 0–0.7 mm (0–0.03 in)



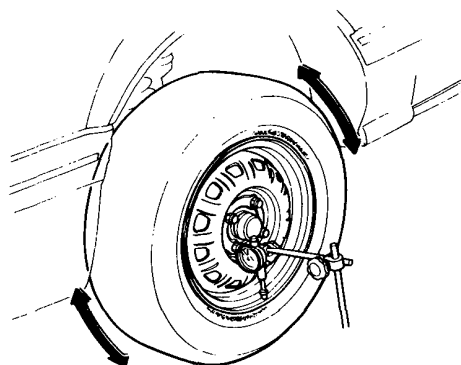
#### Front and Rear Wheel

##### Radial Runout

Standard:

Steel Wheel: 0–0.1 mm (0–0.04 in)

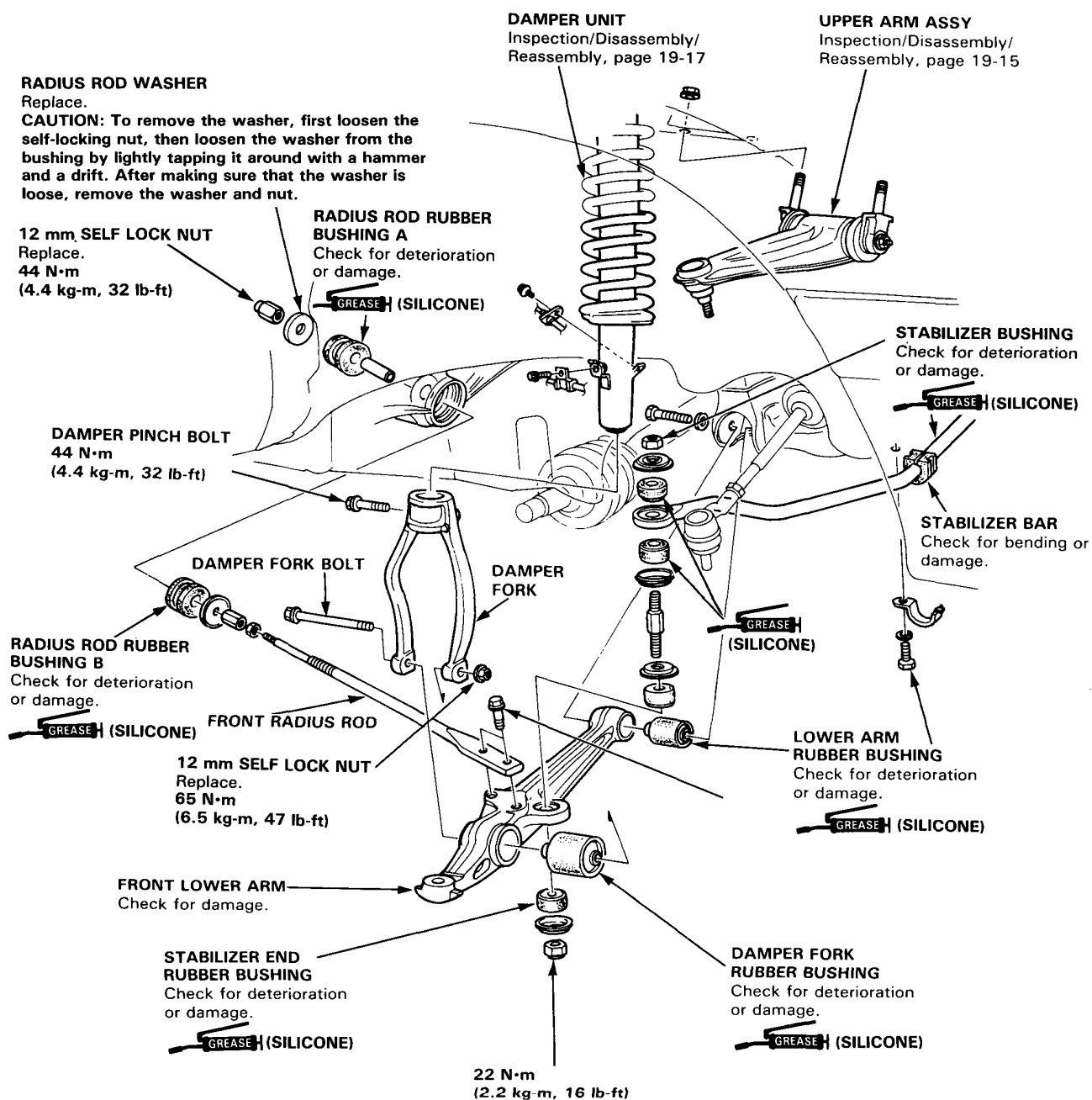
Aluminum Wheel: 0–0.7 mm (0–0.03 in)





# Front Suspension

## Disassembly and Inspection

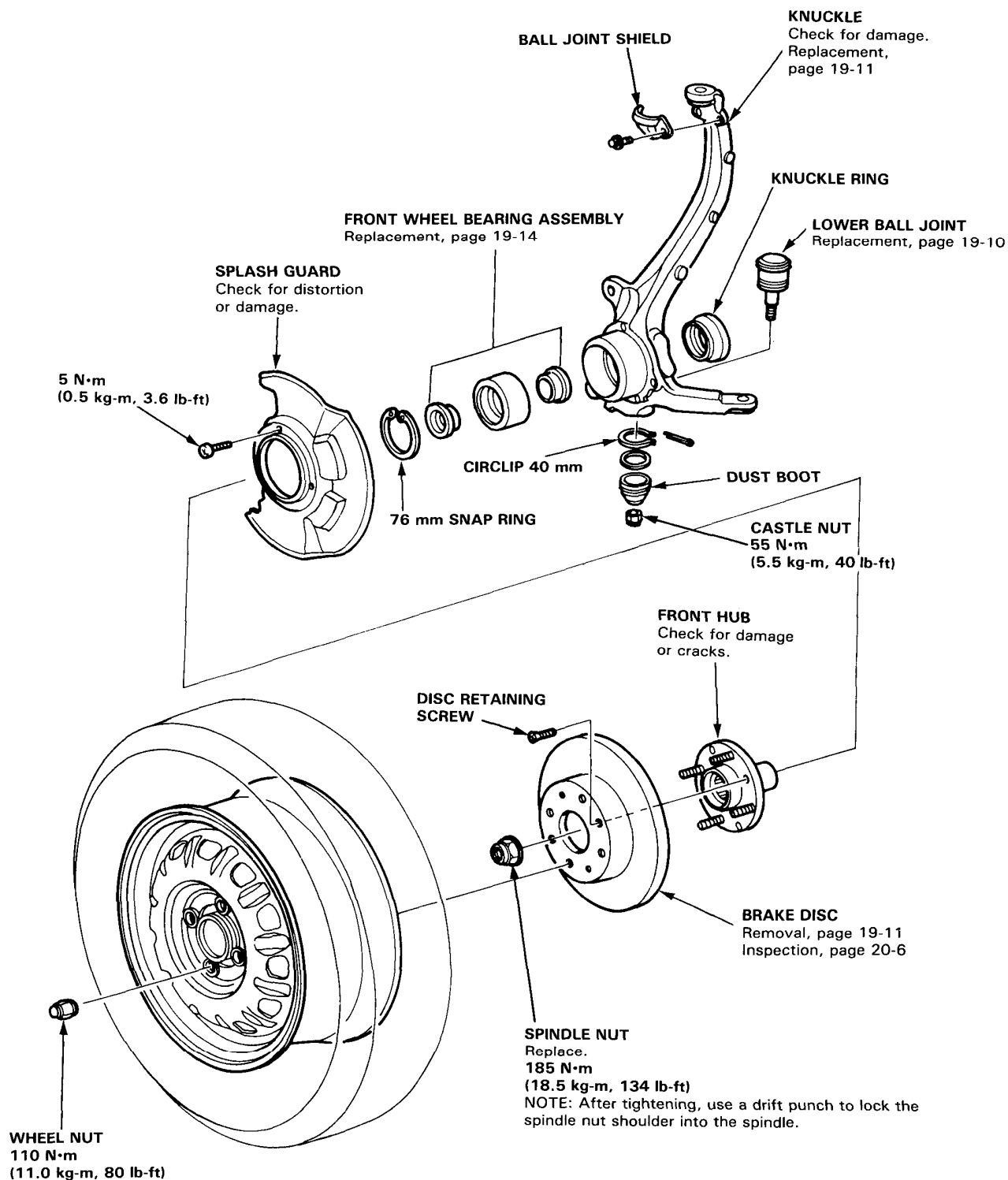


NOTE: The radius rod bushings can be installed for each other. However, the thick bushing should be installed in front position.

(cont'd)

# Front Suspension

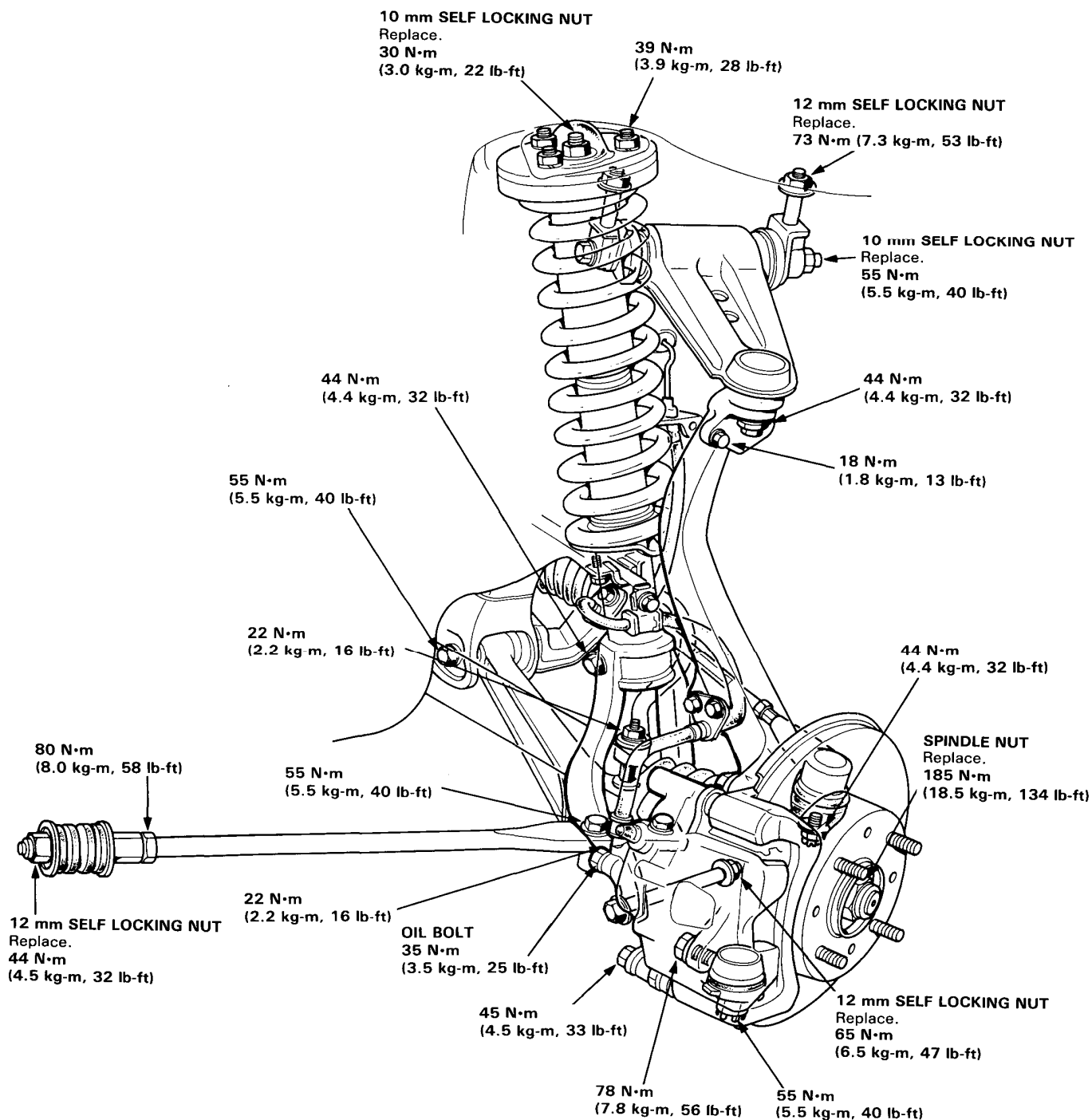
## Disassembly and Inspection (cont'd)







## Torque Specification



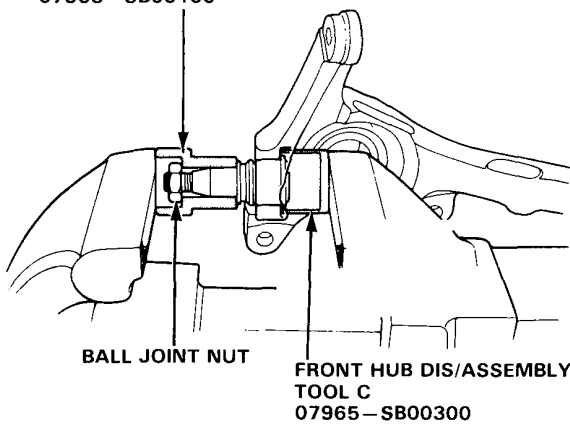
NOTE: Before tightening the bolts or nuts connected to the rubber mounts or bushings, the vehicle weight must be loaded.

## Front Suspension

### Lower Ball Joint Replacement

1. Remove the knuckle (page 19-11).
2. Remove the boot by prying the snap ring off.
3. Remove the 40 mm circlip.
4. Install the special tool on the ball joint and tighten the ball joint nut.
5. Position the special tool over the ball joint as shown then set the assembly in a vise. Press the ball joint out of the knuckle.

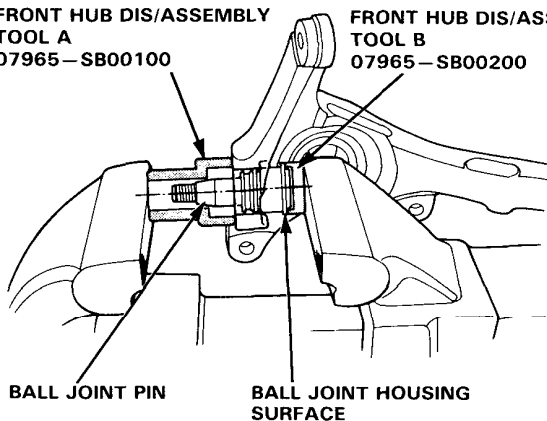
FRONT HUB DIS/ASSEMBLY  
TOOL A  
07965-SB00100



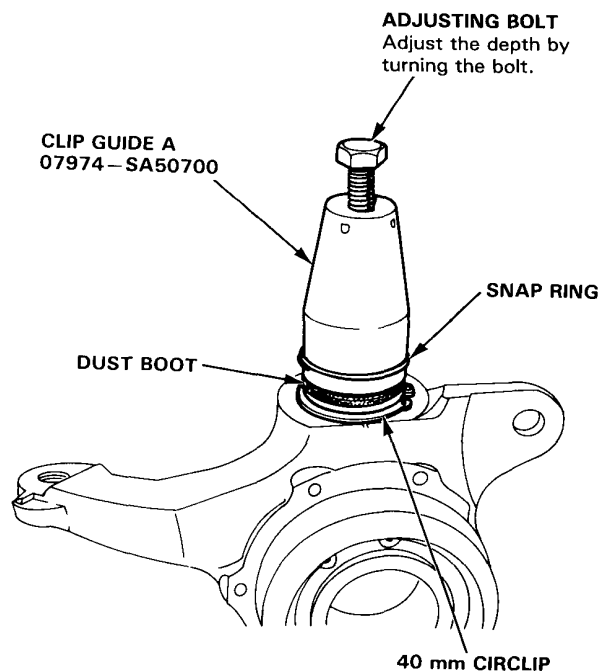
6. Place the ball joint in position by hand.
7. Install the special tool over the ball joint as shown, then press the ball joint in.

FRONT HUB DIS/ASSEMBLY  
TOOL A  
07965-SB00100

FRONT HUB DIS/ASSEMBLY  
TOOL B  
07965-SB00200



8. Install the 40 mm circlip.
9. Install the boot and snap ring using the special tool.

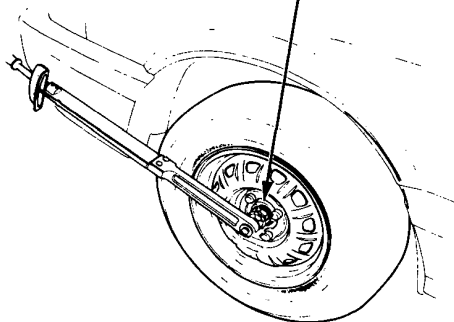




## Knuckle/Hub Replacement

1. Pry the spindle nut lock tab away from the spindle, then loosen the nut using a 32 mm socket.

**SPINDLE NUT**  
Replace  
185 N·m  
(18.5 kg-m, 134 lb-ft)

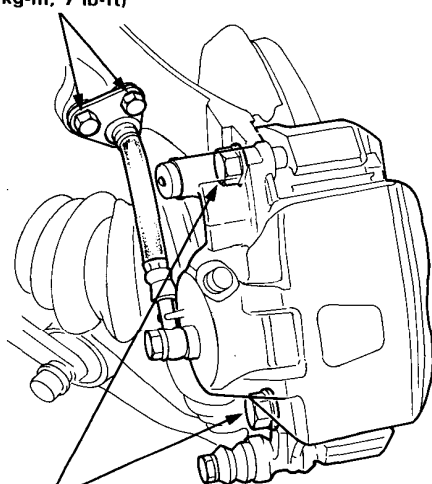


2. Loosen the lug nuts slightly.
3. Raise the front of car and support on safety stands in proper locations.
4. Remove the lug nuts, wheel, and spindle nut.
5. Remove the caliper mounting bolts and hang the caliper assembly to one side.

**CAUTION:** To prevent accidental damage to the caliper assembly or brake hose, use a short piece of wire to hang the caliper assembly from the undercarriage.

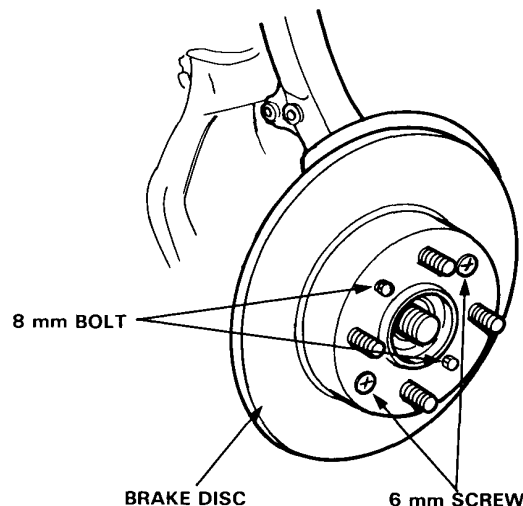
10 N·m  
(1.0 kg-m, 7 lb-ft)

78 N·m  
(7.8 kg-m, 56 lb-ft)

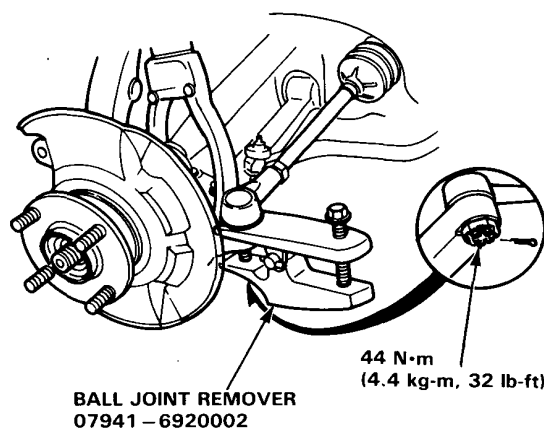


6. Remove the 6 mm brake disc retaining screws.
7. Screw two 8 x 12 mm bolts into the disc to push it away from the hub.

**NOTE:** Turn each bolt two turns at a time to prevent cocking disc excessively.



8. Remove the cotter pin from the tie-rod end and remove the castle nut.
9. Break loose the tie-rod ball joint using the Ball Joint Remover, then lift the tie-rod out of the knuckle.



(cont'd)

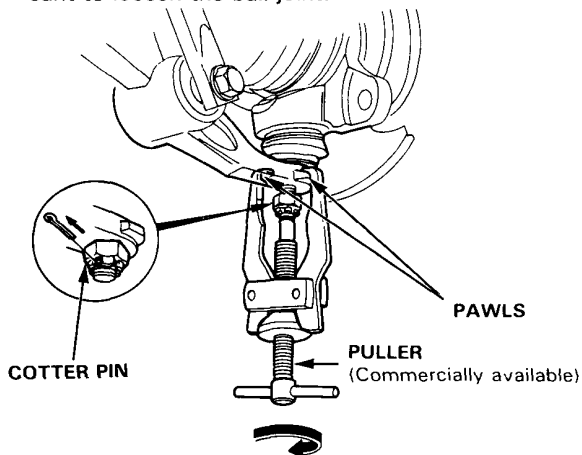
## Suspension

### Knuckle/Hub Replacement (cont'd)

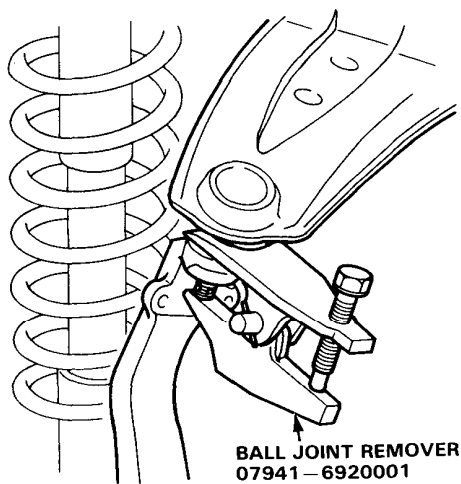
10. Pry the cotter pin off and loosen the lower arm ball joint nut half the length of the joint threads.
11. Separate the ball joint and lower arm using a puller with the pawls applied to the lower arm.

**CAUTION:** Avoid damaging the ball joint boot.

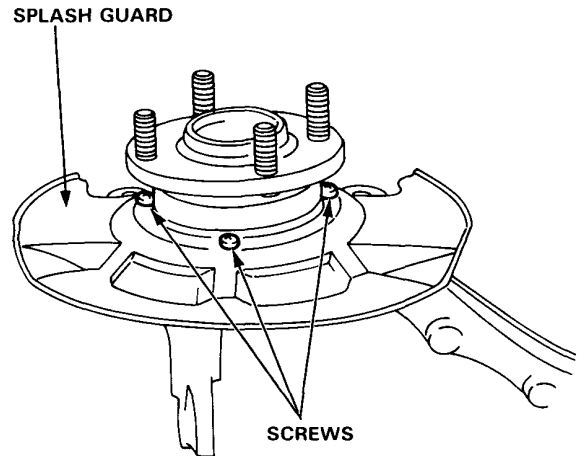
**NOTE:** If necessary, apply penetrating type lubricant to loosen the ball joint.



12. Remove the upper ball joint shield.
13. Pry off the cotter pin and remove the upper arm ball joint nut.
14. Separate the upper ball joint and knuckle using the Ball Joint Remover.
15. Remove the knuckle and hub by sliding them off the drive shaft.



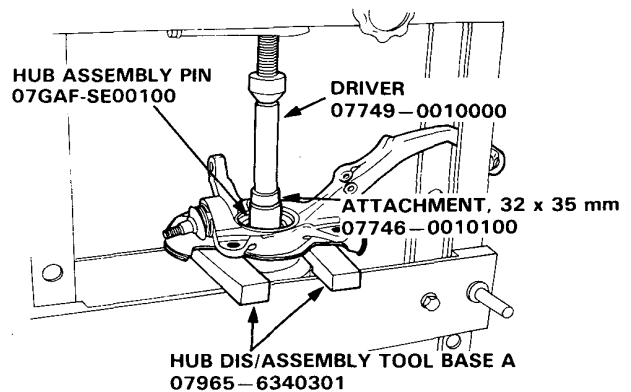
16. Remove the splash guard screws from the knuckle.



17. Separate the hub from the knuckle using the special tools and a hydraulic press.

**CAUTION:**

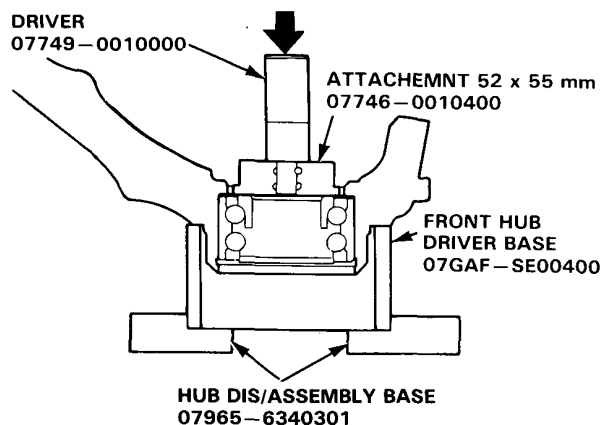
- Take care not to distort the splash guard.
- Hold onto the hub to keep it from falling when pressed clear.





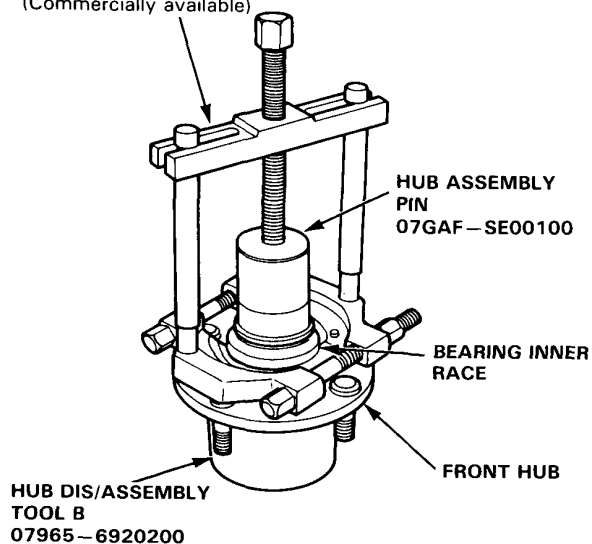
18. Remove the 76 mm snap ring and knuckle ring from the knuckle.

19. Press the wheel bearing out of the knuckle using the special tools shown and a hydraulic press.



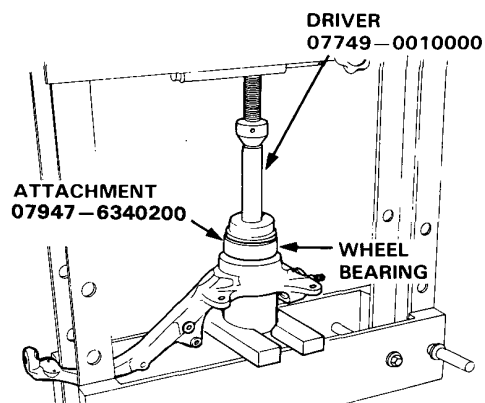
20. Remove the outboard bearing inner race from the hub using the special tools shown and a bearing puller.

BEARING PULLER  
(Commercially available)

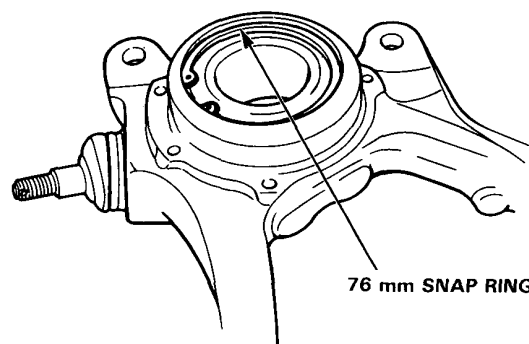


NOTE: Wash the knuckle and hub thoroughly before reassembly.

21. Press a new wheel bearing into the hub using the special tools shown and a hydraulic press.



22. Install the 76 mm snap ring securely in the knuckle groove.

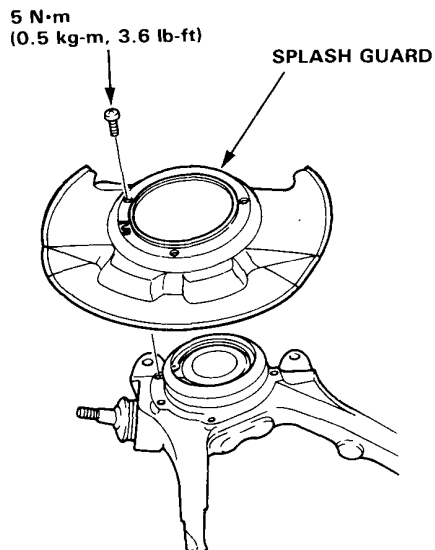


(cont'd)

## Suspension

### Knuckle/Hub Replacement (cont'd)

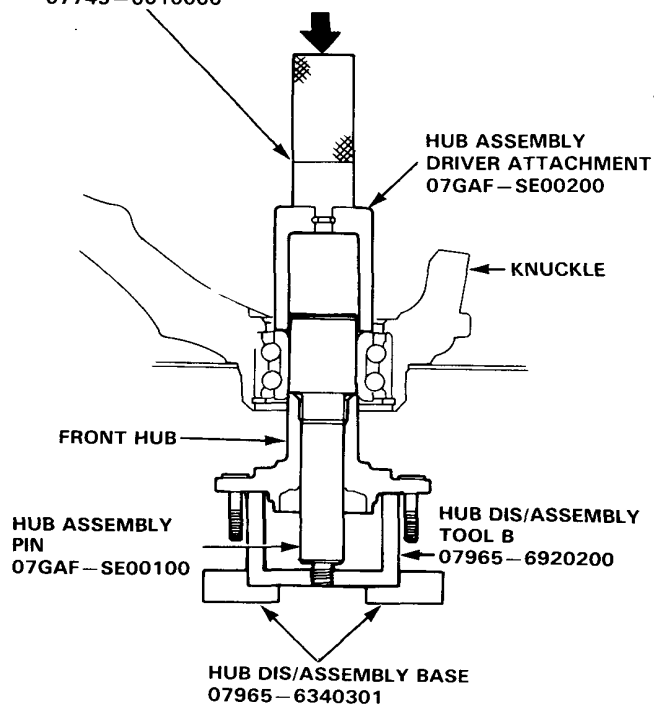
23. Install the splash guard and tighten the screws.



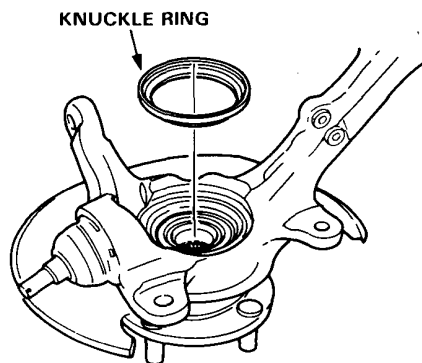
24. Place the front hub in special tool fixture, then set the knuckle in position and apply downward pressure with a hydraulic press.

**CAUTION: Maximum press load: 2 tons.**

DRIVER  
07749-0010000



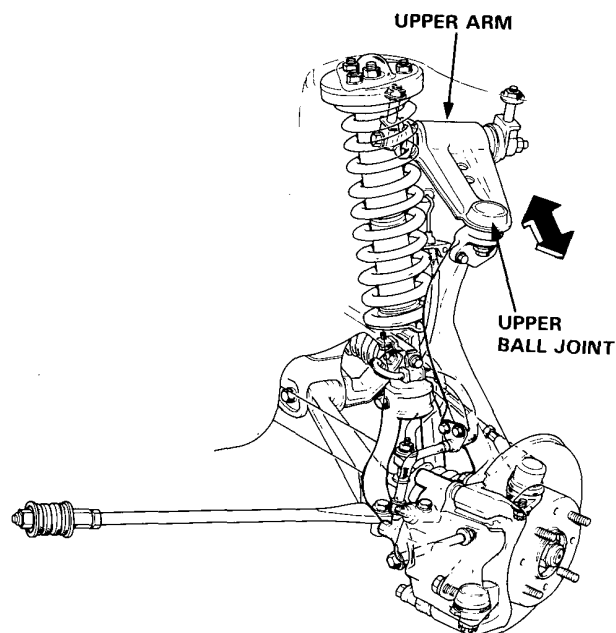
25. Install the front knuckle ring on the knuckle.



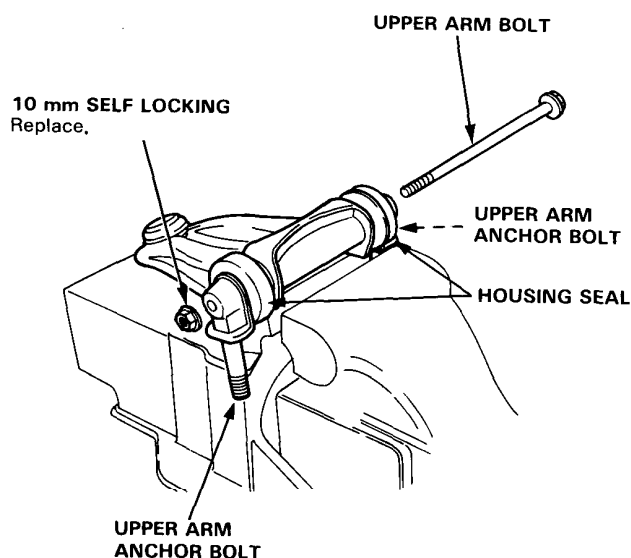


## Upper Arm Bushing Replacement

1. Remove the front wheels.
2. Rock the upper ball joint front-to-back.
3. Replace the upper arm bushings as follows if there is any play.

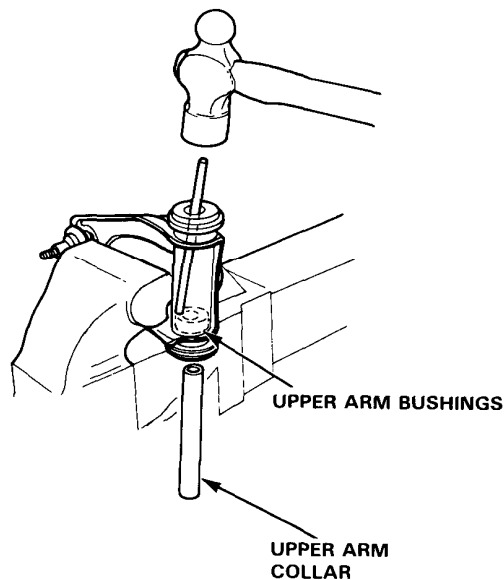


4. Lightly hold the upper arm anchor bolts in the jaws of a vise as shown.

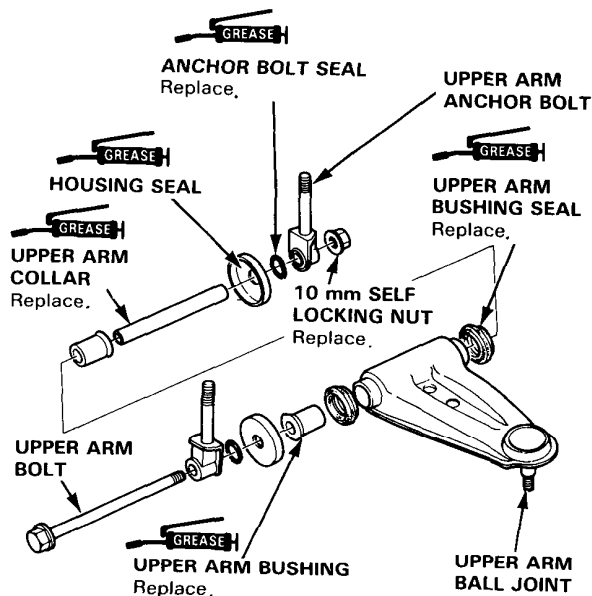


5. Remove the 10 mm self locking nut, upper arm bolt, upper arm anchor bolts and housing seals.

6. Install the upper arm in a vice.



7. Remove the upper arm collar.
8. Drive out the upper arm bushings with a drift.
9. Replace the upper arm bushings, upper arm bushing seals and upper arm collar with new ones.
10. Coat the ends and insides of the upper arm bushings, and the sealing lips of the upper arm bushing seals with grease.



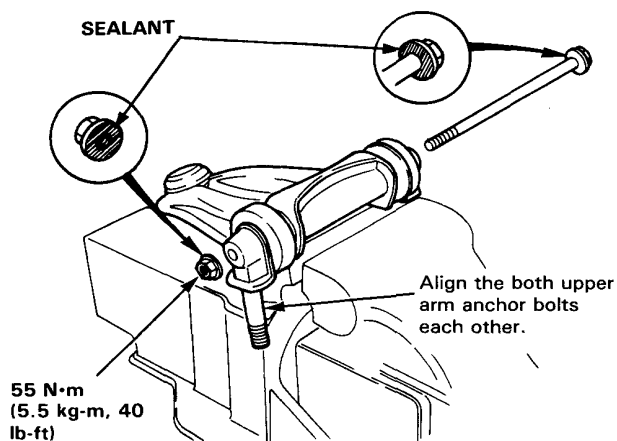
(cont'd)

## Front Suspension

### Upper Arm Bushing Replacement (cont'd)

11. Lightly hold the upper arm anchor bolts in a vise.
12. Apply sealant to the threads and underside of the upper arm bolt heads and self-locking nut. Install the upper arm bolt and tighten the self-locking nut.

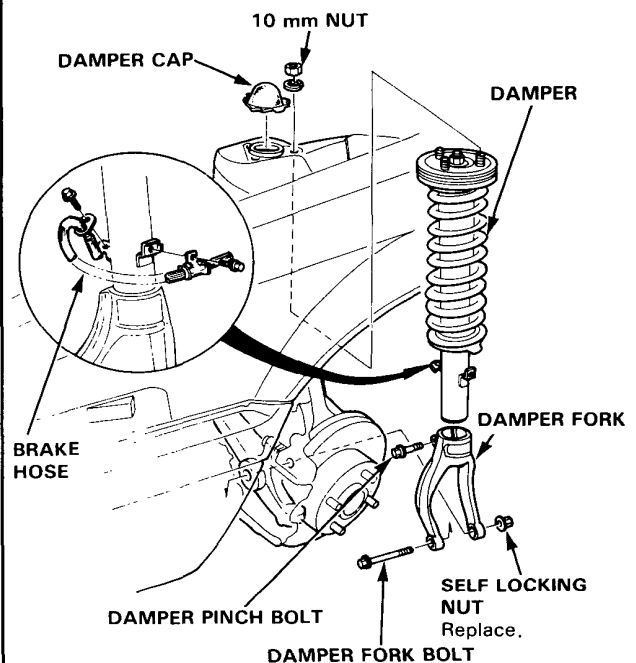
NOTE: Do not apply sealant to the areas other than specified.



13. After installation, check the camber (page19-3).

### Damper Removal

1. Remove the brake hose clamps from the damper.
2. Remove the damper pinch bolt.
3. Remove the damper fork bolt and remove the damper fork.
4. Remove the damper by removing the three 10 mm nuts.



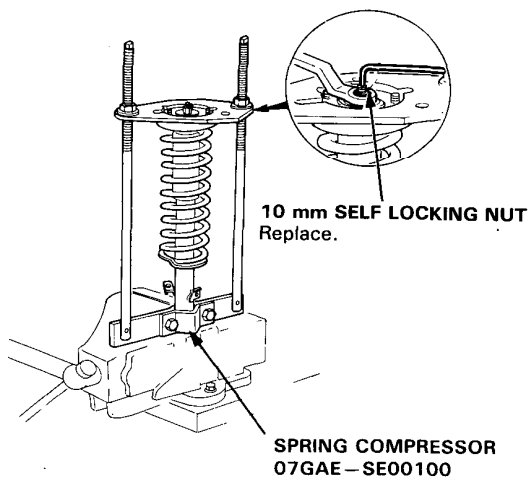




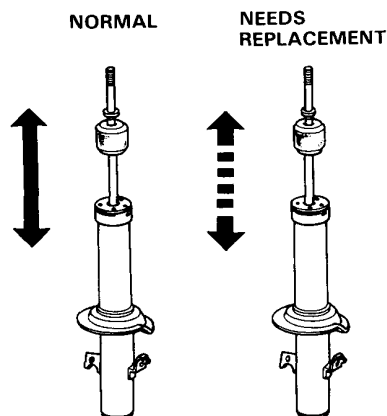
## Damper Disassembly and Inspection

1. Compress the damper spring using the spring compressor, then remove the self locking nut.

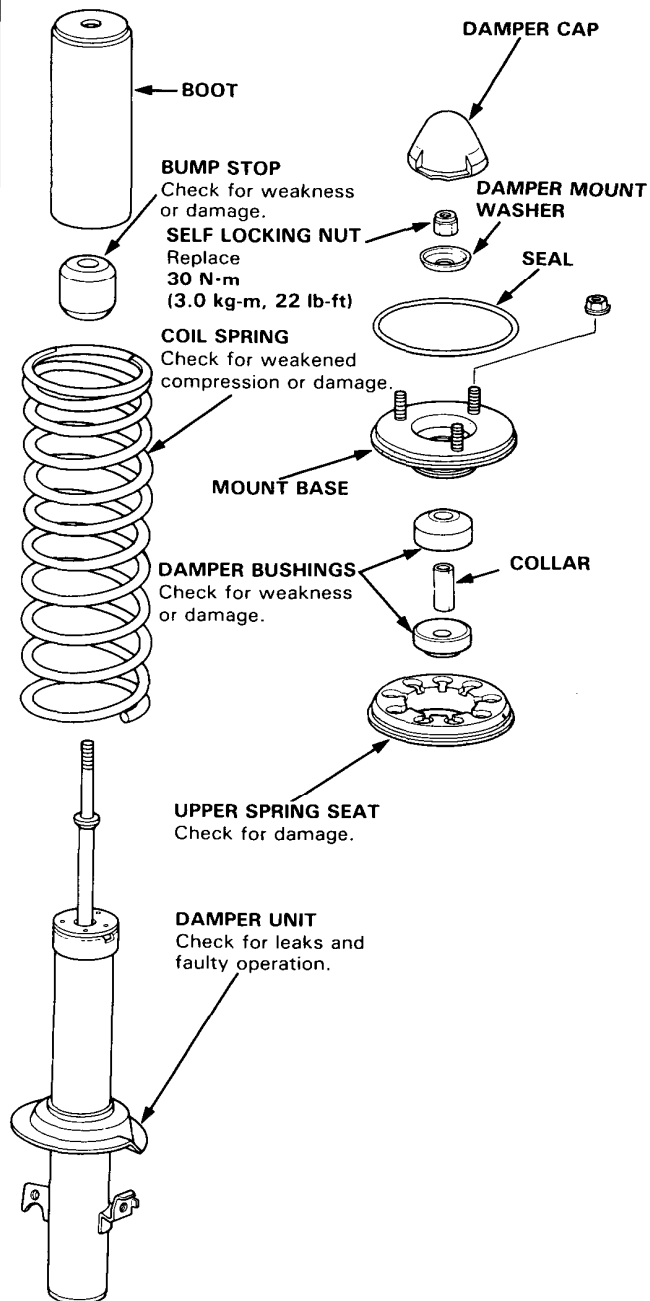
**CAUTION:** Do not compress the spring more than necessary to remove the nut.



2. Remove the spring compressor then disassemble the damper as shown in the next column.
3. Check for smooth operation through a full stroke, both compression and extension.



4. Also check for smooth operation in short strokes of 5–10 cm (2–4 in). Replace the damper if resistance is uneven or jerky.
5. Check for oil leaks abnormal noises or binding during these tests.

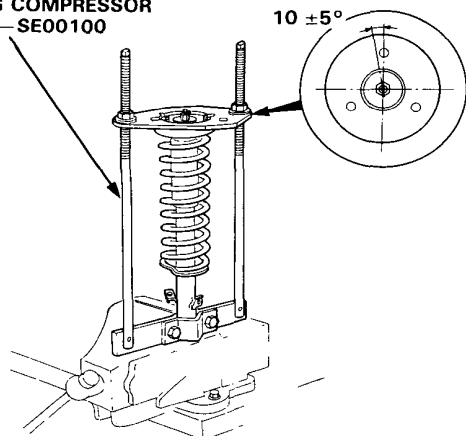


## Front Suspension

### Damper Reassembly

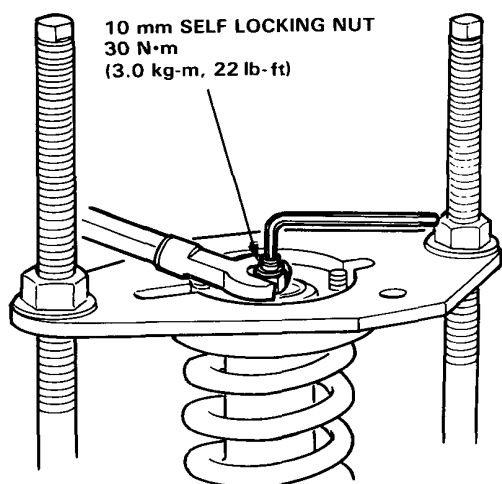
1. Install the damper unit, coil spring, bump stop, boot, upper spring seat, damper bushings, and collar on the spring compressor.
2. Install the mount base on the damper unit as shown.

SPRING COMPRESSOR  
07GAE-SE00100



NOTE: Left side shown, right side antithesis.

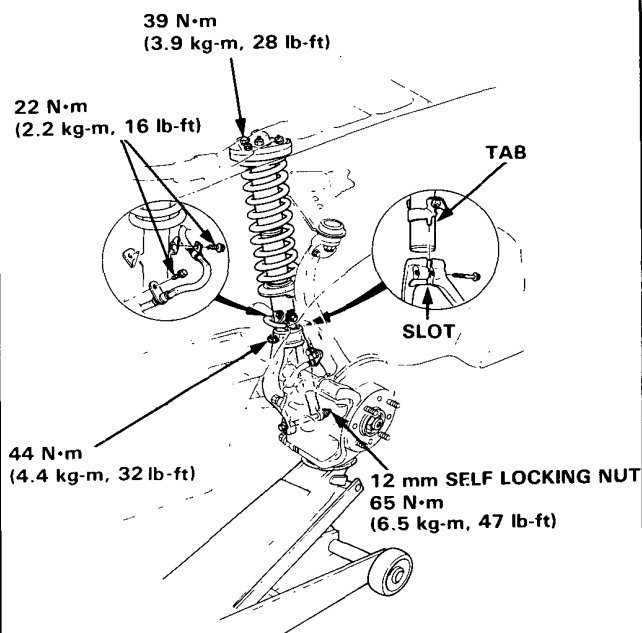
3. Compress the coil spring.
4. Install the damper mount washer and new 10 mm self locking nut.
5. Hold the damper shaft and tighten the 10 mm self locking nut.



### Damper Installation

1. Loosely install the damper on the frame with the aligning mark facing inside.
2. Install the damper fork on the driveshaft and lower arm. Install the damper in the damper fork so the aligning tab is aligned with the slot in the damper fork.
3. Hand tighten the damper fork bolt, damper pinch bolt and 10 mm nuts.
4. Raise the knuckle with a floor jack until the car just lifts off the safety stand.

NOTE: The damper fork bolts should be tightened with the damper under vehicle load.



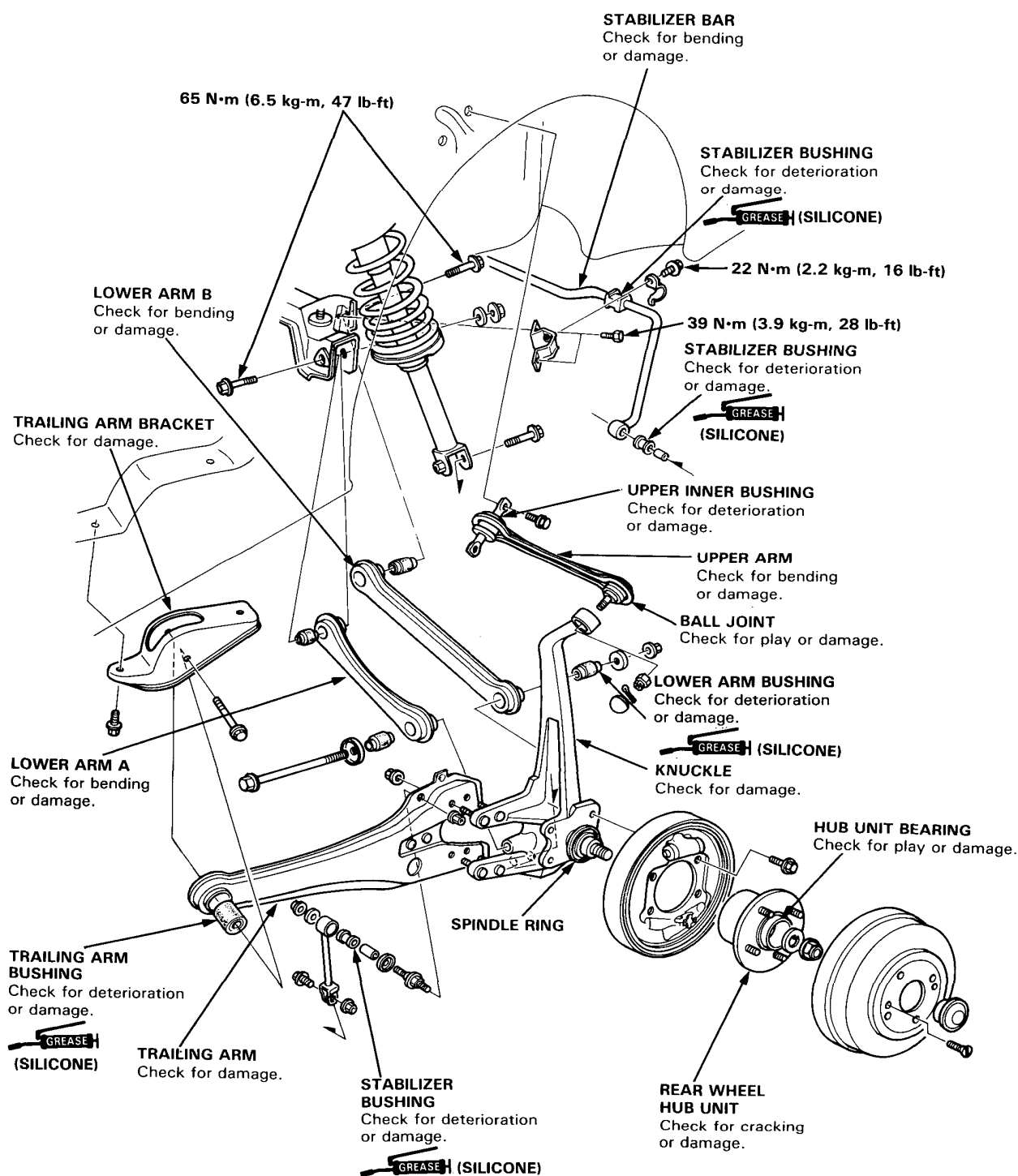
5. Tighten the damper pinch bolt.
6. Secure the damper fork bolt with a new 12 mm self locking nut.
7. Secure the damper assembly to the frame with the 10 mm mount nuts.
8. Install the brake hose clamps with the two bolts.



# Rear Suspension

## Inspection

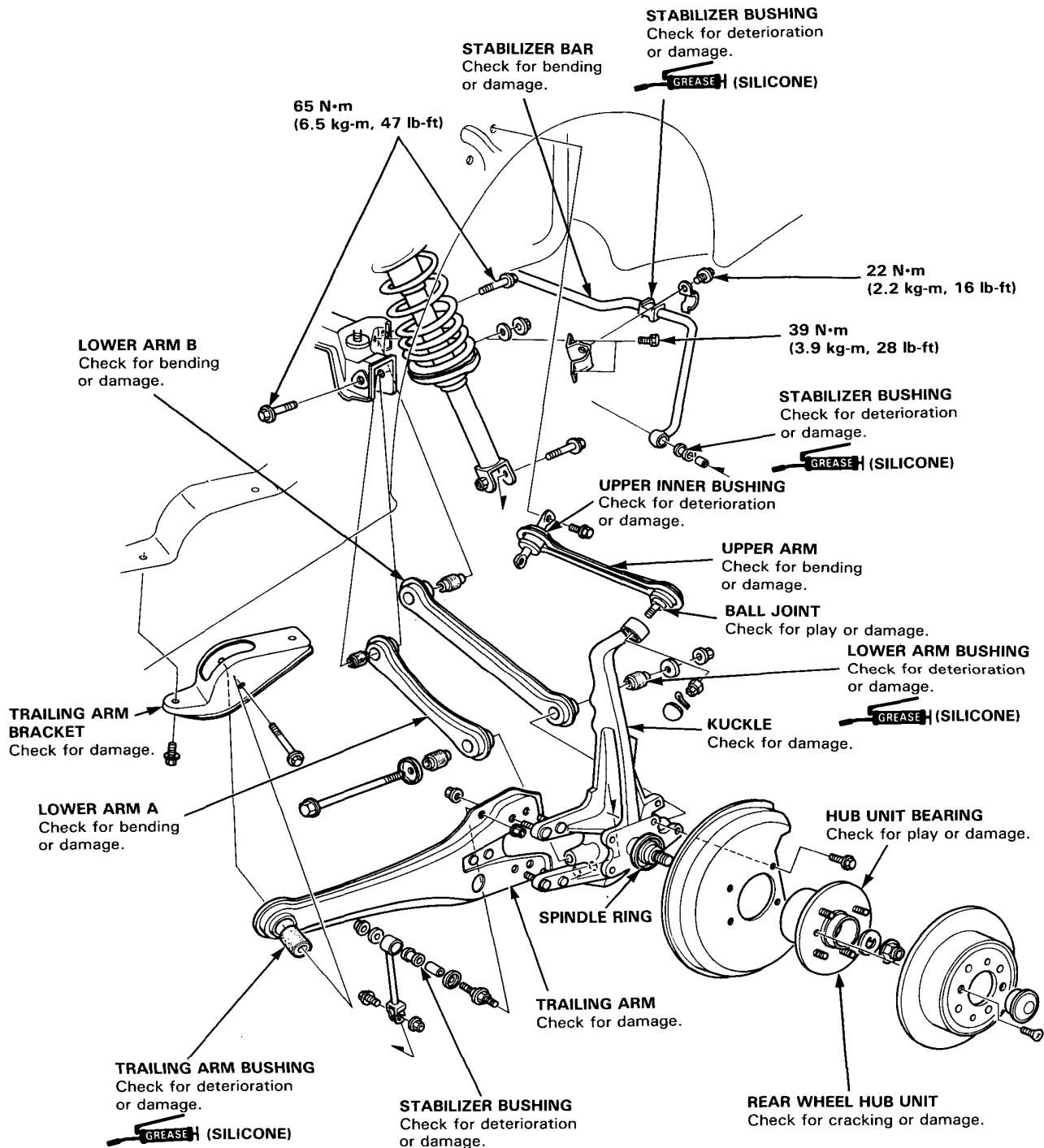
(Drum Brake Model)



# Rear Suspension

## Inspection

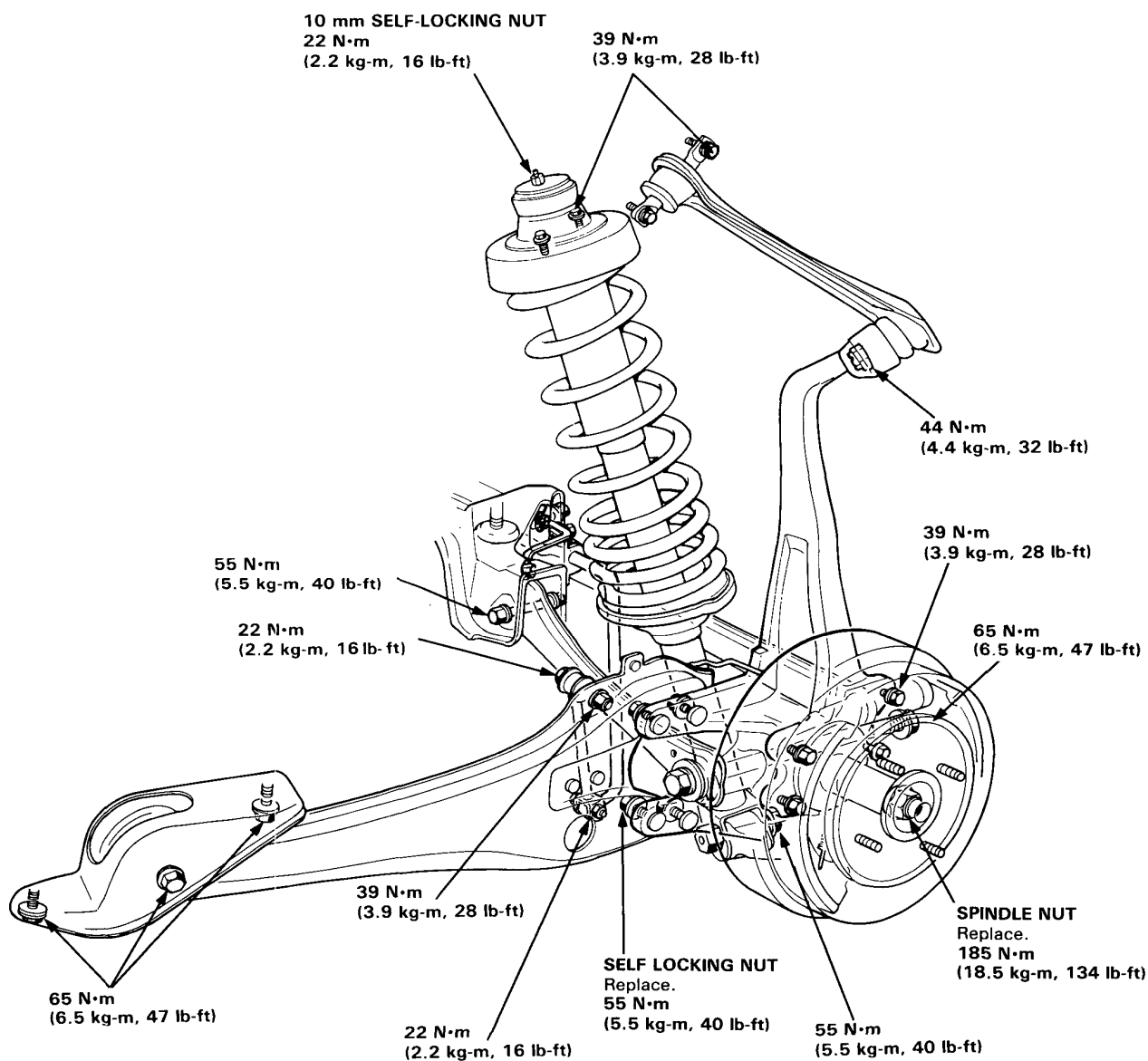
(Disc Brake Model)





## Torque Spec

(Drum Brake Model)

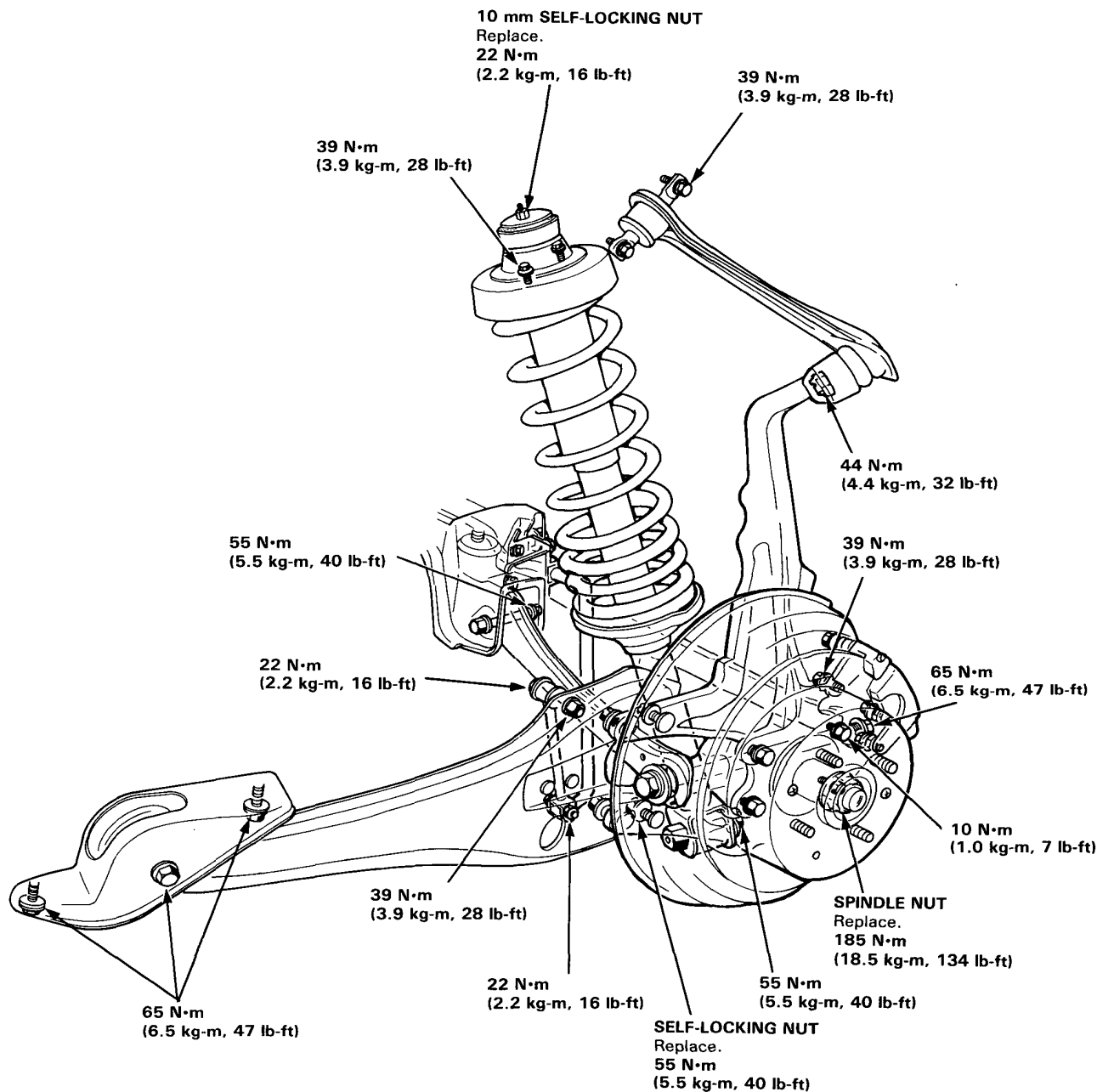


NOTE: Before tightening the bolts or the nuts connected to the rubber mounts or bushings, the vehicle weight must be loaded.

# Rear Suspension

## Torque Spec

(Disc Brake Model)



NOTE: Before tightening the bolts or nuts connected to the rubber mounts or bushings, the vehicle weight must be loaded.



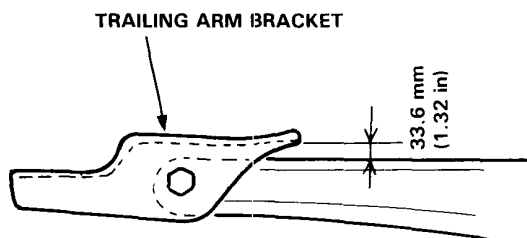
## Dis/Assembly Precautions

**WARNING** Block the front wheels before jacking up the rear of the car.

Check all rubber parts for deterioration or damage before assembly.

Adjust wheel alignment when any of these parts are removed and reinstalled or replaced.

If tighten the trailing arm bracket bolt before installing on the frame, tighten the bracket bolt with a trailing arm to bracket end clearance of 33.6 mm (1.32 in).

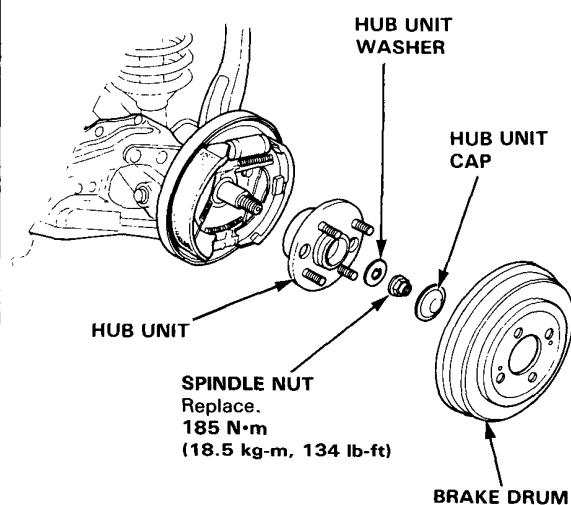


Install the trailing arm bushing with its **FR** mark facing forward.

The lower arms A and B are interchangeable from side to side. Make sure their left and right side marks ( **L**.UP, **R**.UP) are facing up for assembly.

## Hub Unit Bearing Replacement

1. Jack up the rear of car and support on safety stands in proper location.
2. Remove the rear wheel and brake drum.
3. Remove the hub unit cap and pry the spindle nut tab away, then loosen the spindle nut.
4. Remove the hub unit bearing.

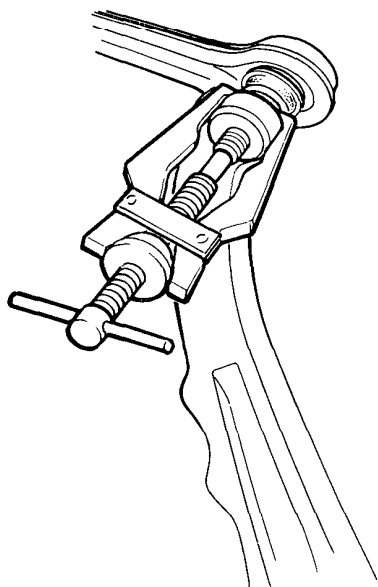


5. Install in the reverse order of removal and tighten a new spindle nut to specified torque, then stake the nut.

## Rear Suspension

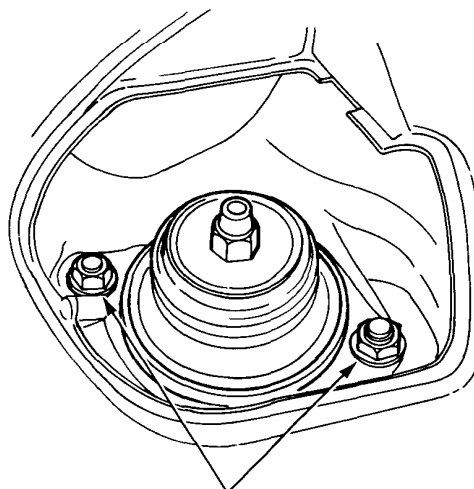
### Ball Joint Removal

1. Remove the upper arm ball joint cap.
2. Remove the cotter pin and ball joint nut.
3. Position the bearing puller between the knuckle and upper arm as shown and remove the knuckle from the upper arm.



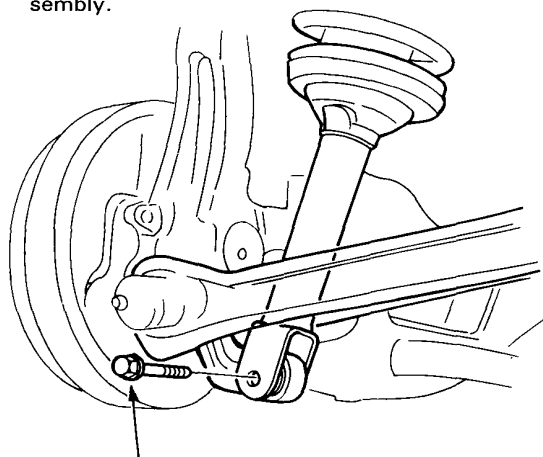
### Damper Removal

1. Jack up the rear of car and support on safety stands in proper locations.
2. Remove the damper upper cover at the rear seat lining.
3. Remove the stabilizer bar from the lower arm.
4. Remove the damper upper mounting base nuts.



MOUNTING BASE NUTS

5. Remove the damper mounting bolt.
6. Lower the lower arms and remove the damper assembly.



DAMPER MOUNTING BOLT

NOTE: On the car with the rear disc brake, remove the parking brake clamp at the trailing arm. Push the rear suspension downward and move the damper in front of lower arm A, then remove the damper.



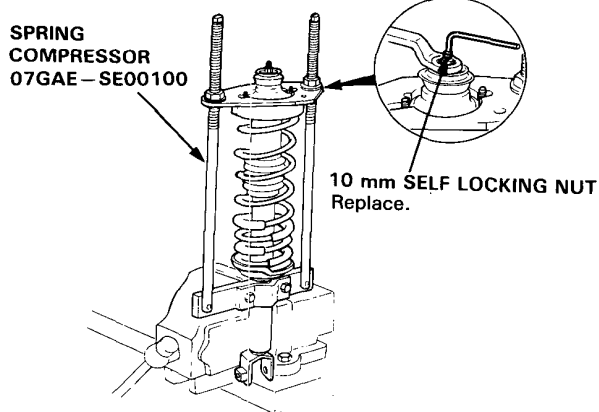


## Damper Disassembly/Inspection

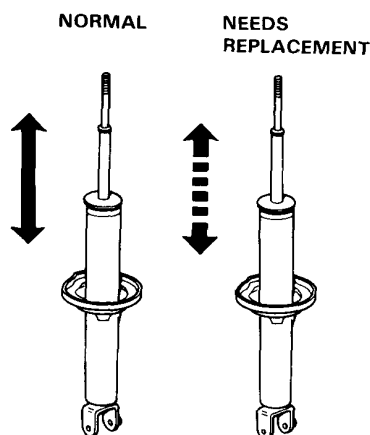
1. Compress the damper spring using the spring compressor.

**CAUTION:** Do not compress the spring more than necessary to remove the 10 mm self locking nut.

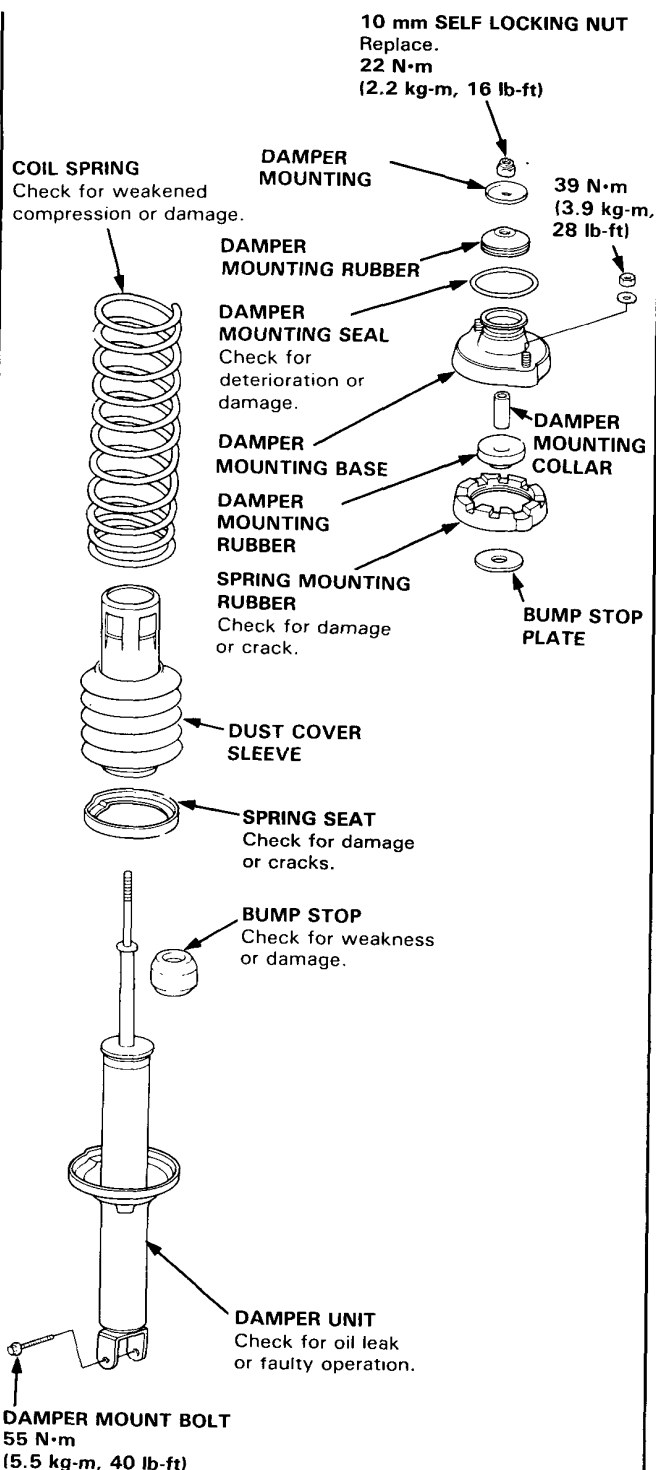
2. Remove the 10 mm self locking nut from the damper assembly.



3. Remove the spring compressor and disassemble the damper as shown in the next column.
4. Check for smooth operation through a full stroke, both compression and extension.



5. Also check for smooth operation in soft strokes of 5–10 cm (2–4 in). Replace the damper if resistance is uneven or jerky.
6. Check for oil leaks, abnormal noises or binding during these tests.

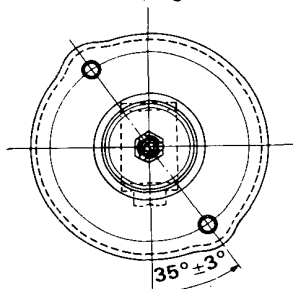


## Rear Suspension

### Damper Reassembly

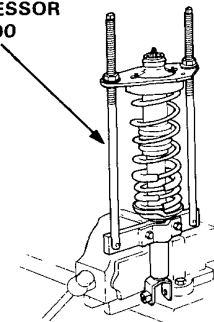
1. Install the spring seat on the damper unit.
2. Install the damper unit, dust cover, coil spring, bump stop plate, damper mounting collar, spring mounting rubber, damper mounting rubber and damper mounting base on the special tool.
3. Install the damper mounting base on the damper unit so that the angle of the bolts is as shown.

NOTE: Left side shown, right side antithesis.

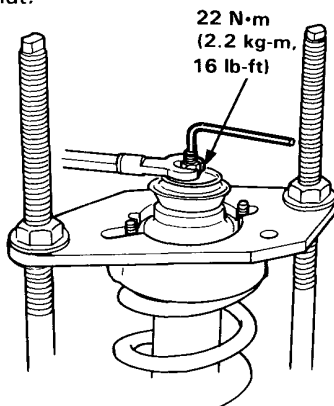


4. Compress the coil spring.

SPRING COMPRESSOR  
07GAE—SE00100

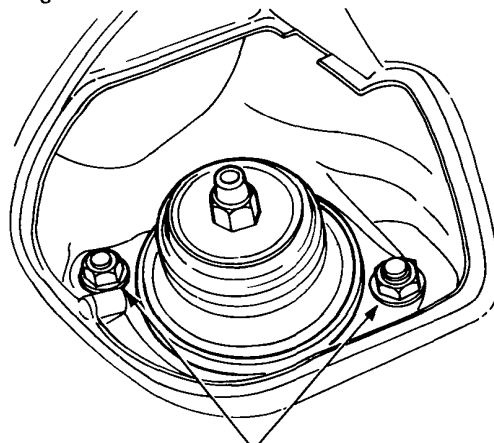


5. Install the damper mounting rubber and damper mounting washer, and loosely install a new 10 mm self locking nut.
6. Hold the damper shaft and tighten the 10 mm self locking nut.



### Damper Installation

1. Lower the rear suspension and set the damper unit in its original position.
2. Loosely install the damper unit mounting bolt.
3. Install the damper upper base mounting nuts and tighten them.



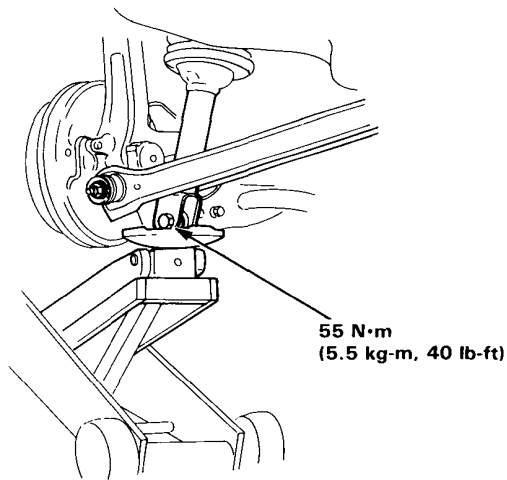
39 N·m  
(3.9 kg-m, 28 lb-ft)

4. Raise the rear suspension with a floor jack until the weight of the car is on the damper.

NOTE: The damper mounting bolts should be tightened with the damper under vehicle load.

5. Tighten the damper mounting bolt.
6. Install the stabilizer bar on the lower arm.

NOTE: Tighten the stabilizer bolts and nuts with the damper under vehicle load.



55 N·m  
(5.5 kg-m, 40 lb-ft)